REPORTS ON EXCURSIONS.

EXCURSION TO PERRY'S LIME-KILNS.

16th August, 1919.

A party of 15 members and friends assembled at Subiaco at 1.15 p.m. and walked thence, *via* Jolimont, to Perry's old homestead.

Soon after leaving Jolimont a number of specimens of the Potato-orchid (*Lyperanthus nigricans*) were obtained. On the small bushes of *Hibbertia hypericoides*, which were bright with their yellow flowers, large numbers of the little metallic green Cockchafer (*Diphucephala* sp.,) were found. The bushes were also frequented by the small copper-coloured Burnet Moth (*Procris amethystina*), two of which were found to have been captured by the leaves of a species of *Drosera*.

On arrival at Perry's the party was joined by some more members who had motored out, and the majority then ascended the hill, examining the quarries cut in the æolian limestone on the way up. From the summit of One-tree Hill, which is the highest point in the neighbourhood, an excellent view of Major Brearley's exhibition of flying in progress over the Claremont Show Ground was obtained, and the party watched his aerial evolutions with great interest.

The fine panorama extending from the Darling Ranges to Rottnest and embracing views of portions of the Swan River and Herdsman's Lake was admired, and the chief features of the physiography of the region explained by Dr. Simpson.

The vegetation of the slopes of the hill was found to be somewhat different from that of the sandy country traversed en route, probably due to the influence of the limestone. Bushes of *Acacia cuneata*, with its curious triangular phyllodes, were in full flower. *Hibbertia polystachya, Candollea pedunculata, Diplopeltis huegelii* and *Olax benthamiana* were also gathered, whilst the bushes were covered with the two common twining plants, *Herdenbergia comptoniana* and *Clematis aristata*.

The thick cover afforded by the luxurious growth of shrubs on the slopes of the hills was evidently a favoured haunt of birds, as the air was full of their notes, though comparatively few were seen. The song of the Brown Honeyeater appeared to predominate. Tawny Admiral butterflies (*Pyrameis itea*) were also noticed flying round the summit of the hill.

Afternoon tea was enjoyed at the camping ground near the old homestead, from which a grassy slope stretches down to a sheet of water. On the latter a pair of Black Swans, several Black Ducks, a flock of White-eyed Ducks and numerous Dabchicks were observed, whilst White-faced Herons patrolled the banks.

After tea the party divided, the majority returning direct by road, whilst eight walked across the bush to West Subiaco station. On the smaller swamp south of the main sheet of water Musk Ducks and Coots were seen, and the Reed Warbler was heard singing; whilst in the walk through the bush Squeakers (*Strepera plumbea*) were disturbed. A small Red-gum tree (*Eucalyptus calophylla*) with exceptionally large fruits was noticed and several more species of wild-flowers were met with. The party reached the station in time to catch the 5.56 train to Perth.

The weather, after a threatening morning, turned out beautiful, though perhaps rather warm for walking.

W. B. Alexander (Leader).

EXCURSION TO GINGIN.

13th September, 1919.

An all day excursion was made to Gingin on Saturday, 13th September, under the leadership of Dr. E. S. Simpson.

Leaving Perth at 8 a.m. the party, numbering 20 members and friends, reached Gingin at 10.45. The main object of the visit was to examine the cretaceous rocks which occupy this district and collect fossils and minerals embedded in them.

Passing up over the shales which outcrop near the station the party climbed Molecap Hill, the sides of which, above the shales, are formed of the sandy soil resulting from the disintegration of the Lower Greensand. The summit of the hill is formed of a thin bed of chalk extending over several acres of ground. This chalk has been opened up by Mr. W. B. Gordon, with whose help a number of fossils were collected from the chalk and several phosphate nodules from the underlying greensand. The fossils included, besides innumerable microscopic foraminifera and sponges, several large foraminifera (*Nodosaria, Cristellaria,* etc.); many echinid spines; four brachiopods (*Trigonosemus, Magas, Magasella,* and *Terebratulina*); some lamellibranchs, especially Inoceramus, the fibrous fragments of which were the most common fossil observed; a gasteropod (*Tubulostium*); an ammonite; an annelid (*Spirulaea*); the tooth of a shark (*Lamna*); and several fossils as yet unclassified. Several of the latter appear not to have been recorded previously from this locality.

The minerals observed at Molecap Hill were: Calcite, quartz, glauconite (abundant in the greensand, common in the chalk); and nodular fluorapatite in the greensand immediately below the chalk.

After lunch besides the stream immediately east of Molecap, the party proceeded eastwards, collecting botanical specimens and observing the geological structure. Underfoot during this part of

the excursion was the Upper Greensand overlying the chalk. Most noticeable was the conversion of the uppermost layer of the greensand into a hard siliceous ironstone by lateritic action. A final halt was made at Mr. Philbey's workings on the chalk and greensand, about 2½ miles east of Gingin. No fossils were collected here, but the minerals were of the greatest interest. From the dump of a small shaft in the Upper Greensand many specimens of the very rare Gearksutite ($CaF_2.AlF_2OH.H_2O$) were obtained, whilst nodular fluorapatite was found to be widely disseminated in chalk and upper greensand.

On the return journey to the station the abundant development of pebbles of ferruginous gibbsite over the outcrop of the shales could not fail to be noticed.

E. S. Simpson (Leader).

EXCURSION TO LAKE YANGEBUP.

14th October, 1919.

An excursion was held to Lake Yangebup, which is about a mile south-west of Bibra Siding, about twenty-five being present. It was the original intention to circumnavigate the lake, but delay on the railway journey cut the time short, and only a portion of the eastern shore was examined. Yangebup is one of the swamps of the chain which runs north and south parallel to the coast, through the limestone hills. The flora of this country is typical, one of the most noticeable members being the Tuart (*Eucalyptus gomphocephala*), which is confined to the coastal limestone belt. The other Eucalypts noticed were the Jarrah (*Eucalyptus marginata*), which was blossoming in a number of cases, the Red Gum (*E. calophylla*) which is the most widely distributed of our Western gums, and the Swamp Gum (*E. rudis*). The latter was growing in some cases in a foot or more of water without apparent discomfort.

Acacia cyanophylla and *A. pulchella* were in full bloom, and a large number of seedlings of the latter were noticed where the bush fires had swept through the bush. The seeds of this and other species of Acacia have a wax-impregnated outer layer of cells which prevents entry of water without which germination cannot take place. The fires have the effect of charring this coat and the seed then absorbs water and germinates. The same thing may be observed in King's Park, where *Oxylobium capitatum* is thriving in areas which have been burnt out. Orchids were represented by *Caladenia Patersonii, C. discoidea, C. flava,* and *Thelymitra ixioides,* Amongst other plants seen flowering were *Macarthuria australis, Hovea pungens, Kennedya prostrarta* (an excellent native fodder plant), *Clematis aristata, Hardenbergia monophylla,* and *Burchardia umbellata.*

Several large vineyards were passed on the way to Bibra Siding in the train, and it is of interest that anthracnose or black spot (a fungal disease due to *Sphaceloma ampelina*), is absent in this limestone country. This disease is common in the hills, whence affected plants have been introduced to this locality. In all cases the disease has disappeared.

D. A. Herbert (Leader).

EXCURSION FROM SWAN VIEW TO DARLINGTON.

18th October, 1919.

The members of the Royal Society who attended this excursion proceeded by the 1.35 p.m. train to Swan View. Starting from this station at about 2.40 p.m. they made their way in a S.S.E. direction. The weather was cloudy, and the day cool for the time of the year—conditions just suitable for a scramble over the hills. The distance from Swan View to Darlington across the Range is about three miles. For two miles we made our way upwards, crossing a series of ridges and depressions.

In geological structure the locality is similar to many other parts along the western escarpment of the Darling Range. Pieces of rock lay abundantly around, ranging from small fragments to boulders a ton or more in weight. Several babbling streamlets, here and there forming miniature cascades, were crossed during the afternoon. The panoramic views (changing at every step) of the Swan Valley to the north-west and west were sights not easily forgotten. About a mile from Darlington the land is at its highest, and from thence slopes downwards to the railway line.

At five o'clock the party rested on some logs by the side of a brook and partook of light refreshments. After this a short walk brought them to the railway station with a few minutes to spare.

I believe the members specially concerned with entomology and geology had a good time, but my interest lay with the wild flowers that grew abundantly all along the way. It seemed wonderful with what profusion they grew between the pieces of rock, often closer together than in clearer spaces. As one member enthusiastically said, "It's a botanist's Paradise."

Although the travelling was somewhat hurried I noted over a hundred plants, representatives of about thirty natural orders. This number would probably be doubled if time allowed for a more careful investigation. The orders best represented were:—Orchideæ (16 specimens), Leguminosæ (16), Proteaceæ (13), Liliaceæ (9), Compositæ (7), Myrtaceæ (6), and Stylideæ (6).

As a kind of supplement to these few notes I append the names, classes, and orders of nearly all the flowers I observed. They may be of some use to young students of botany, showing when and where they may be found in full bloom.

A. J. Hall (Leader).

Specimens noted on the excursion from Swan View to Darlington, Saturday, 18th October:—

Orchideæ—

1. Thelymitra crinita
2. Thelymitra fusco-lutea
3. Diuris emarginata
4. Prasophyllum elatum
5. Prasophyllum macrostachyum
6. Prasophyllum fimbrium
7. Microtis porrifolia
8. Lyperanthus nigricans
9. Lyperanthus suaveolens (?)
10. Caladenia Patersoni
11. Caladenia Gemmata
12. Caladenia flava
13. Caladenia Menziesii
14. Caladenia paniculata
15. Glossodia Brunonis
16. Glossodia emarginata

Leguminosæ—

17. Gastrolobium spinosum
18. Gastrolobium spathulatum
19. Mirbelia spinosa
20. Gompholobium Shuttleworthii
21. Gompholobium polymorphum
22. Burtonia pulchella
23. Jacksonia Sternbergiana (?)
24. Jacksonia
25. Sphærolobium
26. Daviesia cordata
27. Pultenæa ericifolia
28. Hovea chroizemifolia
29. Kennedya prostrata
30. Kennedya Stirlingii
31. Kennedya coccinea
32. Labichea punctata

Proteaceæ—

33. Petrophila striata
34. Isopogon sphærocephalus
35. Isopogon asper
36. Synaphea petiolaris
37. Conospermum Huegelii
38. Lambertia multiflora
39. Grevillea bipinnatifida

Proteaceæ (continued)—

40. Grevillea quercifolia
41. Grevillea Synapheæ
42. Hakea lissocarpha
43. Hakea
44. Dryandra nivea
45. Stirlingia simplex

Liliaceæ—

46. Burchardia umbellata
47. Thysanotus Patersoni
48. Caesia rigidifolia
49. Chamaescilla corymbosa
50. Tricoryue elatior
51. Stypandra glauca
52. Sowerbæa laxiflora
53. Borya nitida
54. Xanthorrhœa gracilis

Compositæ—

55. Brachycome (pink)
56. Aster paucidentatus
57. Helichrysum
58. Craspedia Richea
59. Cryptostemma calendulaceum
60. (Yellow daisy)
61. (Yellow everlasting)

Myrtaceæ—

62. Verticordia Huegelii
63. Verticordia nitens (?)
64. Calythrix Fraseri
65. Hypocalymma robustum
66. Melaleuca trichophylla
67. Calothamnus quadrifidus

Stylideæ (Candolleaceæ)—

68. Stylidium repens
69. Stylidium bulbiferum
70. Stylidium carnosum
71. Stylidium amœnum
72. Stylidium crassifolum
73. Stylidium

Hæmodoraceæ (Amaryllideæ)—
74. Tribonanthes longipetala
75. Conostylis setosa
76. Conostylis setigera
77. Conostylis aurea
78. Anigozanthos Manglesii

Goodeniaceæ—
79. Dampiera linearis
80. Leschenaultia biloba
81. Scaevola striata
82. Scaevola

Euphorbiaceæ—
83. Poranthera ericifolia
84. Phyllanthus calycinus (m.)
85. Do. do. (f.)

Umbelliferæ—
86. Xanthosia Atkinsoniana
87. Actinotus leucocephalus
88. Eryngium rostratum

Epacrideæ—
89. Lysinema ciliatum
90. Andersonia homalostoma
91. Andersonia sprengelioides

Caryophylleæ—
92. Silene gallica
93. Dianthus prolifer

Labiatæ—
94. Stachys arvensis
95. Bartsia latifolia

Polygaleæ—
96. Comesperma
97. Fumaria officinalis

Irideæ—
98. Patersonia glabrata
99. Romulea rosea

Dilleniaceæ—
100. Hibbertia

Tremandreæ—
101. Tetratheca nuda

Rutaceæ—
102. Boronia spathulata

Sapindaceæ—
103. Diplopelts Stuartii

Stackhousieæ—
104. Stackhousia

Amarantaceæ—
105. Ptilotus (Trich) Drummondii

Polygonaceæ—
106. Muehlenbeckia adpressa

Thymeleæ—
107. Pimelea

Rhamnaceæ—
108. Cryptandra

Campanulaceæ—
109. Lobelia

Orobancheæ—
110. Orobanche

Filices—
111. Cheilanthes tenuifolia

EXCURSION TO LESMURDIE FALLS.

1*st November*, 1919.

A party numbering ten visited the Lesmurdie Falls on Saturday, November 1st, walking to the falls from Guppy's Siding and returning by the same route. The day was warm and somewhat oppressive, indicating the approach of summer, but the flowers were still brilliant. In addition to the unrivalled blue of *Leschenaultia biloba* the blue orchid *Thelymitra crinita* helped to brighten the roadsides, the plants being very numerous and every flower wide open in the morning sunshine. By the time the party returned in the afternoon the flowers of this plant had resumed their more usual shut up condition.

The view from the top of the falls extending across the coastal plain to the sea was admired, and the party then descended to the foot of the falls and enjoyed lunch by the stream. A fair amount of water was still coming down the steep rock faces of which the fall is composed, but owing to there being no geologist in the party the members had to content themselves with admiring without full comprehension of the causes which have led to the formation of the peculiar niche in the hillside in which the falls are situated.

After examination of a deserted shaft reputed to be an ancient gold mine, and much turning over of logs and rocks in search of insects, a return was made in more leisurely fashion, plants being collected en route. About the falls the handsome purple-flowered *Melaleuca radula* was the most conspicuous shrub, whilst in the valley at their foot white spikes of *Lhotzkja acutifolia*, pink masses of *Lasiopetalum bracteatum* and the blue-flowered twining *Marianthus coeruleo-punctatus* were among the most showy species. The orchids obtained included *Thelymitra longifolia*, *T. fusco-lutea*, *Caladenia paniculata*, *Glossodia emarginata*, *Microtis alba*, *Diuris setacea*, and *D. pauciflora*. The latter species with its short spike of pale yellow flowers with purple patches towards the centre was a novelty to most of the members present.

A small specimen of the common Worm-snake or Blind Snake, *Typhlops australis*, was found under a log, and amongst other insects the brilliant jewel-beetle, *Stigmodera gratiosa*, and a curious unidentified species of locust with the wings reduced to little scarlet flaps, hidden beneath the small brown elytra, were captured. The male of the latter species is very much smaller than the female. A dipterous fly, showing a striking resemblance to a winged female ant, was also captured.

W. B. Alexander (Leader).

EXCURSION TO GREENMOUNT.

15th November, 1919.

An excursion to Greenmount took place on Saturday, November 15th, the itinerary being from the railway station down to the Helena River on one side of the brook, and back along the other side. A few weeks' spell of dry weather had killed off the annual herbs on the hillside and very little flowering material of the perennials was available. Near the railway station the native flora had been ousted by introduced weeds, mainly Guildford Grass. Here and there patches of the Cape Weed (*Cryptostemma calendulaceum*) still flowered, but for the most part this plant had been killed off by the dry weather. Further from the station where stock and other human agencies had not killed off the native vege-

tation, very few aliens had established themselves, practically the only one being *Anagallis arvensis*, the pimpernel. The predominant form of this species was that with the blue flowers, but a number of red flowered specimens were collected, though no true scarlet forms were observed. *Xanthorrhoea preissii* (the Blackboy) was flowering on the left side of the brook and on the hillside on the right the *Xanthorrhoea* formation consisted almost entirely of the new species, *X. reflexa*. This latter, however, had finished flowering.

Among the plants flowering at the time were *Labichea lanceolata*, *Darwinia citriodora*, *Acacia cyanophylla* (rather late), *Eucalyptus rudis* (the swamp gum), *Burtonia scabra*, *Jacksonia sternbergiana*, *Tetratheca nuda* and *Persoonia angustiflora*. On the banks of the Helena River some excellent examples of the transition of the pinnate leaves of *Acacia cyanophylla* to the flattened phyllodes were observed. These indicate the line of descent of the Black Wattle from a far-off pinnate-leaved ancestor which, as conditions became drier, gradually reduced its leaf surface to reduce its water transpiration, and finally lost all the lamina. The leaf stalk then became flattened and took on assimilatory functions and this is the normal type to-day.

On the flats of the river the native vegetation had been replaced artificially by such fodder plants as *Trifolium repens* (the Dutch Clover), *Paspalum dilatatum*, etc., and a few weeds such as *Bromus sterilis*, but in neglected corners these were being reconquered. A very prevalent fungus on the bark of *Acacia cyanophylla* and on the Swamp Gum was *Schizophyllum commune*, which was about the only *Agaricaceous saprophyte* collected, though *Polyporaceae* were very abundant

The latter part of the excursion was devoted to the extinguishing of a bush fire, the result of the investigation on the part of one of the members into the relative inflammability of *Xanthorrhoea preissii* and *X. reflexa*.

D. A. Herbert (Leader).

EXCURSION TO GARDEN ISLAND.

6th December, 1919.

On Saturday, December 6th, 1919, a party of 16 members and friends left Fremantle about 9.30 by motor boat to explore one of the islands off the coast. As a fairly strong south-westerly breeze was blowing, it was decided to make for Garden Island, and after an uneventful run of about 1¼ hours the whole party safely landed in a sheltered bay at the north end of the island. Before lunch

the company scattered in various directions. Those who ascended the cliffs reported that the cliff tops were covered with grass, whose seed made walking distinctly unpleasant. Others explored the beach in both directions, finding an alternation of sand and limestone rocks. (See Photo. Plate X., p. 57). A party of the handsome Crested Terns were resting on the rocks at the north-west corner of the island, and the presence of Brown-winged Terns (*Onychoprion anaethetus*) hovering over an islet a short distance from the mainland induced the ornithologist to wade out across the reefs. He was rewarded by the discovery of three eggs of this species laid singly under the protection of overhanging ledges of rocks without any attempt at nest-making. A young Silver Gull only partially fledged was also found in a nest amongst the bushes on the top of one of the rock-stacks.

After lunch the majority walked along the sea-beach as far south as the Haycock, the highest hill on the northern part of the island. The view from the summit was pronounced to be well worth the trouble of the ascent, though the atmosphere was not as clear as usual. The whole interior of this part of the island was seen to be thickly covered with cypress pines (Callitris), interlaced with various creepers forming a dense matted jungle. Nearer the coast, on the slopes of the hills, thickets of wattles (*Acacia cyclopis*) with occasional tea-trees (*Melaleuca*) occur, and in places there are open tracts covered mainly with grasses. Here were found growing the daisy-like *Athrixia australis* and the beautiful blue-flowered *Trachymene coerulea*. On the limestone headlands running out to the sea various shrubby plants occur. Two were noticed in flower, namely, the strongly-scented Boronia alata with beautiful light-green pinnate leaves, and a pretty white-flowered labiate, *Westringia rigida*.

Mr. Hall, who specially devoted his attention to the flora, reports having collected 30 different plants representing about 20 orders. In addition to those already mentioned, he identified *Scaevola crassifolia, Rhagodia billardieri, Eremophila Brownii, Phyllacanthus calycinus, Cakile maritima, Leptomeria Preissiana, Tersonia brevipes, Conostylis aurea, Tricoryne elatior, Spinifex hirsuta, Sonchus oleraceus, Solanum nigrum, Centaurea sp., Mesembrianthemum sp., Anisopogon sp., Senecio sp., Conostylis sp., Pelargonium sp., Solanum sp.*, and *Thomasia sp.*

The north-western shores of the island are fringed with reefs which were not exposed during our visit and are probably only laid bare by exceptionally low tides. These reefs are chiefly covered with thick growths of Sea-grasses (*Fluviales*), the two common species being *Cymodocea antarctica* and *Posidonia australis*. A fringe along the beach consisted of fruits of the latter species containing in some cases the large seeds with a germinating seedling.

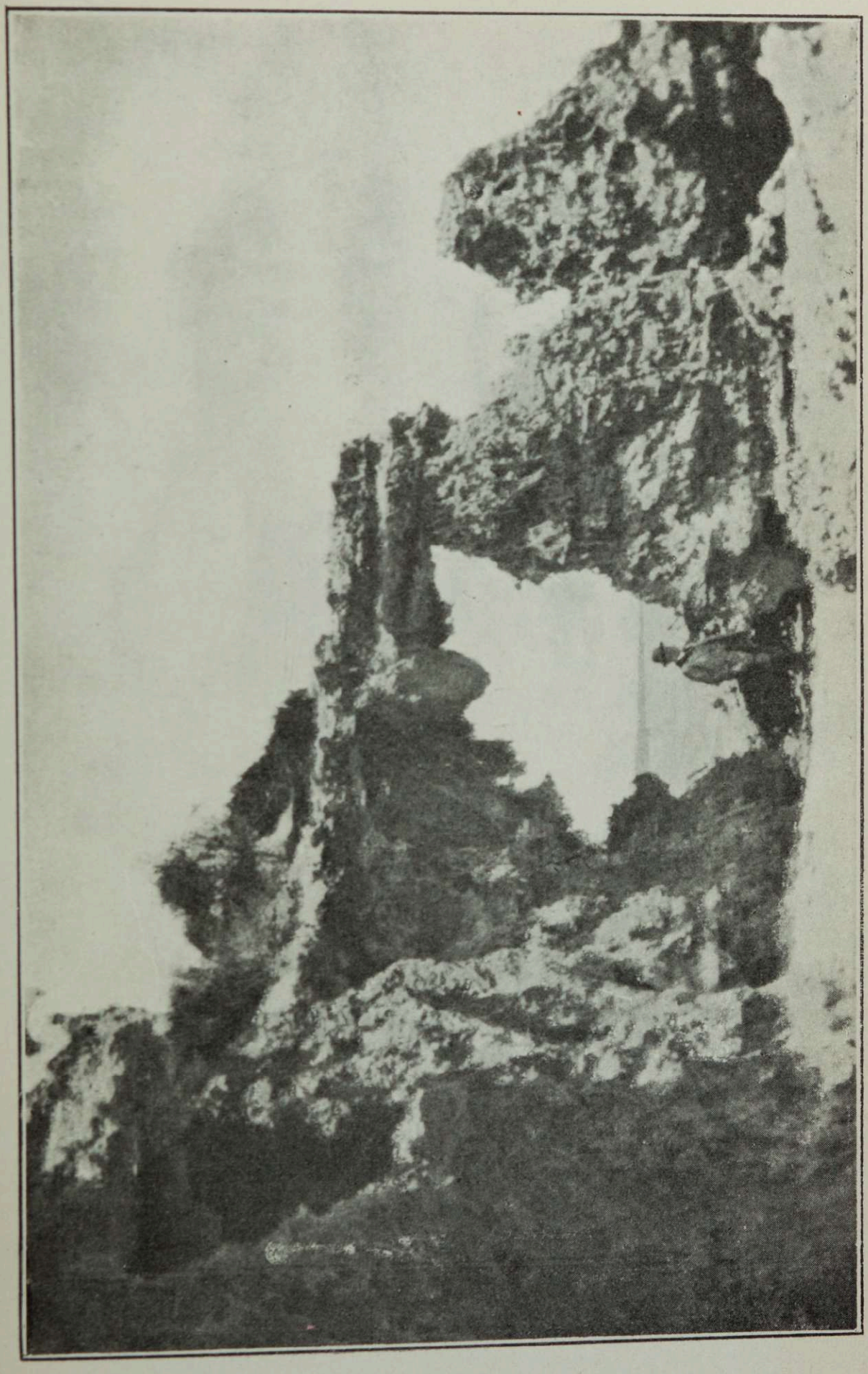
On the bases of the leaves where they were hidden in the sand were found numerous chitons, doubtless of the genus *Stenochiton*, of which Mr. E. Ashby has recently published an interesting account in the Proc. Roy. Soc. S. Australia, 1918. He has discovered that the various species of the genus live on sea-grasses and are only accidentally found elsewhere. Those collected at Garden Island probably belong to the two species *S. juolides* and *S. posidonialis*.

In some small rock pools larvæ and pupæ of a species of mosquito were observed flourishing in the salt water, whilst on the surface of one pool great numbers of a Springtail, of the family *Poduridae*, were found.

About 6 o'clock the party left the island with regret and with a following breeze made a speedy run back to Fremantle, escorted for part of the journey by a playful dolphin.

W. B. Alexander (Leader).

Plate X.



Limestone Arch at North end of Garden Island.
(Photo. by Miss Enid Allum.

INDEX.

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